CRYPTOZOOLOGY

VOL. 1 WINTER 1982

Cryptozoology, 1, 1982, 1–12
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Sto.
Rz. 819478

WHAT IS CRYPTOZOOLOGY?

BERNARD HEUVELMANS
Verlhiac Saint-Chamassy, 24260 Le Bugue, France

[TRANSLATED BY RON WESTRUM
Department of Sociology, Eastern Michigan University, Ypsilanti, Michigan 48197, U.S.A.]

ABSTRACT: Cryptozoology is the science of "hidden" animals. While paleontology discovers and describes organisms of the past, cryptozoology attempts to do the same with unknown animals of the present. Cryptozoological reconstructions are no more fantastic or illegitimate than those of paleontology. Modern zoology does not accept many species, the evidence for which fails to fulfill certain conditions, thus banishing them to "non-existence." Science must rely on three kinds of proofs: autoptical, testimonial, and circumstantial, and all are subject to question. The life sciences pretend to rely more on autoptical proofs, which is illusory, since evolutionary theory itself is based only on circumstantial evidence. New facts are never accepted easily, but familiarity ultimately results in conviction, habit rather than logic being the determining factor. Common objections to cryptozoology can be disposed of easily. The inventory of large animals in both aquatic and terrestrial environments is far from complete, and the mammals of Africa, Asia, and South America are poorly cataloged. The role of mythology is important, as hidden animals lend themselves easily to forced mythification. The task of cryptozoology consists of demythifying the content of information in an attempt to help make the inventory of the planet's fauna as complete as possible.

Before attempting to define what cryptozoology is, let us begin by making clear what it is not. Cryptozoology is not an arcane or occult zoology, as some, in an attempt to discredit it, have suggested. It is no more an occult science than is paleozoology the ancient science of animals, or paleontology (from the Greek *palaios*, old, *ontos*, beings, and *logos*, discourse) an archaic or obsolete study of past living organisms. In the late 1950's, I coined the term "cryptozoology" from the Greek roots *kryptos* (hidden), *zoon* (animal), and *logos* (discourse), and it means simply "the science of *hidden* animals," just as paleontology is "the science of *ancient* animals."

But what are "hidden animals?" They are those more generally referred

to as "unknowns," even though they are typically known to local populations—at least sufficiently so that we often indirectly know of their existence, and certain aspects of their appearance and behavior. It would be better to call them animals "undescribed by science," at least according to prescribed zoological rules (to which we will return later). These animals are truly "hidden" in much the same manner as those species of the past which, after numerous genetic transformations, gave birth to the species of today. We know that such ancient species *must* have existed, but we have yet to find the fossil remains of many of them, and hence their relationships with animals both living and extinct are only dimly perceived.

Paleontology has brought to bear increasingly subtle methods for systematizing and accelerating the discovery and description of animals of the past. Cryptozoology has now set for itself the same task in regard to those living animals which have so far resisted all our attempts at capture or collection. It could very well be, of course, that certain of these hidden animals are indeed known, but only in fossil form. They may be representatives of "extinct" species whose survival is simply unrecognized. In this case, "hidden" would be more appropriate than "unknown."

Cryptozoology and Paleontology, Sister Sciences

There are strong parallels between cryptozoology and paleontology. Just as paleozoology, the paleontology of animals, searches for and studies animals lost in a "time dimension," cryptozoology is devoted to the search for and study of animals hidden in a "space dimension." These two sister sciences, then, are engaged in the joint exploration of our world to aid in completing its inventory of fauna, but they do so along different dimensions and with somewhat different emphases.

Both disciplines are founded on the *exception*: in one case on fossilization, a rare phenomenon which only occurs under the right environmental conditions, and in the other on the fortunate visual observation of usually elusive or well-camouflaged animals. Both depend on reconstructions—through interpolation, extrapolation, or conjecture—on the basis of incomplete data: usually fossil fragments or prints in the case of paleontology, and fragmentary remains or traces in the case of cryptozoology (tufts of hair, feathers or scales, feces, blood, tracks, damage done to other animals or the environment, photographs or acoustic recordings, etc.). Above all, cryptozoological reconstructions depend on the simple accumulation of concurrent eyewitness testimony, which might well be considered the sensory stimuli retained in the memories of the observers.

The precision of reconstructions in cryptozoology is the only one subject to positive verification, since it may be possible to actually find a "hidden" animal, including its soft tissue, and examine it at leisure following its capture

or collection. While it certainly happens in paleontology that additional fossil material becomes available, as in the case of *Dinornis,* it is impossible to go back in time to examine the living animal itself. Occasionally, however, such specimens may come *forward* in time, and we may examine them entirely and almost perfectly preserved (as in the case of the Siberian mammoths, which were protected from spoilage by frozen peat ground, or the hairy rhinoceroses of Galicia, which were "pickled" in mineral wax, or insects enclosed in amber). Also, we somtimes discover, through primitive drawings or sketches, old but accurate representations of fossil animals, which provide information about their external morphology. Finally, we may be lucky enough to discover an actual living representative of a group thought to be extinct, of which the coelacanth is the best-known example, although there are dozens of others.

The hypotheses and reconstructions of cryptozoology (regarding animals actually alive) are no more daring, questionable, fantastic, or illegitimate than those upon which paleontology has based its reconstruction of the fauna of past ages. The vested interest of those who argue the reverse is shown by the following case. It seemed perfectly legitimate to give the scientific name of *Chirotherium* to a fossil genus known only by its tracks, found in Germany, England, France, Spain, Italy, and the United States, and of which some 20 species have been described. Yet, at the same time, it seemed ridiculous, premature, and absurd to describe scientifically the Himalayan Yeti, known *not only* by many tracks not identifiable with any known animal, but also by morphology and behavior as related by numerous eyewitnesses, and about which one can compile a coherent set of indicators which converge on a scientific description. Furthermore, this description makes perfect sense from the perspective of anatomy, physiology, ethology, and ecology.

The Necessity of Parataxa

Conscious of an irregular situation, certain paleontologists have argued against the application of traditional Linnaean nomenclature to discrete parts or life-stages of animals which are deemed to be unidentifiable in terms of the whole animals to which they belong, especially since such animals could well be unknown. This same concern extends to fossilized tracks which can rarely be attributed to precise varieties (species, even genera) known only by their fossil skeletal remains.

For this reason, Raymond C. Moore and P. C. Sylvester-Bradley (1957) proposed that such traces be named *parataxa* (as distinct from *taxa,* usually reserved for identifiable varieties), and that a separate system of classification be created for the former. In his *Principles of Animal Taxonomy,* George Gaylord Simpson (1961), deplored the fact that this very sensible proposition did not receive official recognition: "All of paleontology

is based on parts, only, of animals and it would be a crippling blow to evolutionary biology if regular biological classification were not attempted, at least, in all cases."

My own feeling is that it deals an equally paralyzing blow to evolutionary biology not to do as much to classify those animals whose remains we do not yet possess, but about which we nonetheless possess a coherent dossier of reports. I also wish that the International Commission on Zoological Nomenclature would make official the notion of *parataxa* not only for the classification of unidentifiable fossil fragments or tracks, but also for animals known only by traditions, reports, or ambiguous physical evidence. It is indefensible, from the point of view of epistemology, to have a double standard for classifying animal species, according to whether or not they have become extinct.

Having thus noted the many similarities which exist between paleontology and cryptozoology, it is evident that the methods and techniques of the former, which have continued to develop and multiply since the beginning of the science at the start of the 19th century, will often be valuable for the latter. Reciprocally, one can argue that the procedures and theories of cryptozoology, which I have tried to put into practice since the 1950's, open the door to certain novel applications for paleontological research.

The Equivalence of Evidence Before the Tribunal of Science

Even if the notion of *parataxa* is not officially recognized, one important point is worth emphasizing: the requirement of a type-specimen for the legitimation of the existence of an animal species, even if constituted by a simple anatomic fragment (as is sometimes the case in paleontology), is an arbitrary rule, founded solely on a recently established convention. The older zoology tried to describe *all* the animals with which men had acquaintance. It would admit the existence of *any* new species, provided its description allowed it to be recognized, and the group to which it belonged was stated. Since 1930, more bureaucratic (and, in a sense, more ruled by prejudice) contemporary zoology no longer accepts those species which do not fulfill certain very strict conditions.

It was the creation of the International Code of Zoological Nomenclature—whose utility is unquestioned—which, as an unexpected and undesirable consequence, resulted in the expulsion of animals not meeting the necessary conditions for a description "according to the rules." By a somewhat tortuous logic, many persons have concluded, because of the "ban" on naming these animals scientifically, that they do not exist! Somewhat less obtuse persons advise waiting for the capture of a first specimen before proceeding to admit a new species; they suggest remaining at a kind of balance point, a suggestion which can only appear as ignorance coming from specialists in the science

of animals. This sterile suspension of activity—and its excessive and unjustified "prudence"—should be condemned.

In its quest for truth, science bases itself essentially on reason. (This certainly does not mean that everything can be known by reason and only by reason, or that nonrational knowledge should be ignored and neglected.) It must also be noted that science can never reach an absolute and objective truth; it nonetheless aspires to the most *convenient* description possible of the Universe in the present state of knowledge, as Henri Poincaré (1906) most judiciously argued. Hence, science should utilize *all* the resources put at its disposal by the world of phenomena, as long as they can be treated in a logical manner. Scientific workers should not make premature choices, nor decide against any method of investigation which is based on reason.

To establish the reality of an object or event, science—like the courts of law—has three possible types of proof: autoptical, testimonial, and circumstantial. As the great legal authority John Henry Wigmore (1935) sensibly put it, there simply are no others.

Autoptical proofs are those which all individuals can see at will with their own eyes (from the Greek *auton,* self, and *optike,* art of seeing), or can touch, smell, and taste; in short, experience through their own senses: material objects or actions taking place at the present moment. *Testimonial* proofs are those based on testimony, the description of observations presumably made by other persons. As for *circumstantial* proofs, they depend on the coherence of pieces of evidence, which, *taken together,* complete and corroborate each other.

Contrary to what one might be tempted to think, *all* these forms of proof are equally subject to question, and "material" proofs are far from being the most solid or worthy of belief: they prove nothing but their own existence, and, furthermore, they can be altered or faked. In a court of law, where the life of a defendant may be at stake, decisions are practically always based on circumstantial evidence. Edwin M. Borchard (1932) showed that, in 80 percent of the cases examined, judicial errors (those that were detected) were due to testimonial evidence (mistaken identifications or perjury), and that autoptical proofs were not admissible in a case of murder: if the crime takes place in front of the judge and jury, the latter immediately become witnesses!

The sciences base themselves on *all* forms of proof. By the nature of things, the physical sciences (chemistry, physics, nuclear science, wave mechanics, astrophysics, etc.) seldom require recourse to autoptical proofs. Beyond a certain scale, the object of their investigations, whether enormously large or minutely small, is beyond the reach of the organs of sense, even when considerably enlarged with the help of instruments. The fundamental particles and the waves of matter are only known through their *effects*; the structure of the Universe cannot be conceived except through mathematical

models, and the nature of celestial bodies is inferred only from the luminous spectra they emit. The earth sciences (geology, geophysics, etc.) must have recourse to the same kind of inferences once they go beyond the Earth's crust: the nature and composition of the interior of our planet are known essentially by the study of seismic shocks. Among the social sciences, prehistory and archaeology are founded on material objects, but these are typically used as circumstantial evidence (as are exhibits in a court of law), and history depends largely on testimonial proofs, e.g., the archives and reports of the chroniclers of the period.

Only the life sciences, in particular paleontology, zoology (as well as its subdivision, bioanthropology), and botany, seem (or pretend) to depend upon autoptical proofs. Their workers refuse to believe in the existence of a species, or at least to ratify it, without the evidence of an unequivocal material specimen. Not only is this requirement unjustified on epistemological grounds; it is also illusory. Whether one wishes it or not, it must be recognized that evolutionary theory itself, which dominates and illuminates all contemporary biology, is strictly founded on circumstantial evidence. We do not possess the least autoptic proof of macroevolution, nor is it established through experimental science, of which so much is made. Experimental science, in fact, is only the means for transforming circumstantial and testimonial proofs into autoptical proofs. What many seek to present as the sole *true* science is only one side of scientific research, perhaps only a facet. It is quite wrong to pretend, as many self-styled rationalists have readily done, that the only science worthy of the name is the sum of facts which can be reproduced in a laboratory. This is only true of a tiny minority of elementary and basic phenomena.

In biology, a whole gamut of types of knowledge—notably most studies in ethology and even ecology—repose *entirely* on testimonial evidence: the reports of field observers, which are seldom accompanied by photographic documentation (and, above all, by motion picture films) which illustrates the behaviors described and the situations analyzed. Such "material proofs" are nonetheless susceptible to tampering, as those already incredulous never miss emphasizing when it is a question of unknown animals or unusual behavior.

Although it may not always be evident, new facts are usually not accepted without opposition by the scientific community unless they fall within certain parameters, possess a reassuring banality, and are not radically new. When they are truly novel, they will be accepted only in the long run—perhaps after about 30 years, the space of a generation (Lumière 1941)—when a certain consensus is reached, familiarity allowing them to be reconciled, little by little, with previous knowledge viewed as well-founded. Evidential proofs play only a secondary role in the process, and only the obstinate accumulation

and repetition of the new facts permit them ultimately to bring about conviction. Routine and habit, not reason and logic, are the determining factors. As we have already stated, nothing is absolutely true: every fact acquires only a greater or lesser degree of probability.

It is due to this statistical character of truth that the scientific community's acceptance of new facts or original theories is as fluctuating as the measure of popularity of a politician as determined by the opinion polls.

Some Common Objections

It is easy to dispose of the most common objections to cryptozoological research. First, it is argued that, the planet being today well-known, explored in its most remote recesses, there is but a small chance of discovering unknown animals. It is correct that the amount of *Terrae incognitae* has receded in the course of the centuries. It is also true that there remains on the maps a powdering of "white patches," as is shown by the occasional discovery of a mountain, a great river, an important waterfall, or an island previously unnoticed. There are two regions, furthermore, whose exploration is only just beginning: Antarctica, and that which has been called "the seventh continent" (and certainly the most vast): the oceans. In any case, the production of extremely detailed maps (usually based on aerial or satellite imagery) of a region does *not* signify that one knows its fauna, much less *all* its fauna. This brings us to the second classic objection to cryptozoology: there is no longer any hope of discovering significant new species of animals.

The historical study of the discovery of species belonging to diverse branches of the animal kingdom shows, on the contrary, little slackening in the course of the years. Whereas the number of "good" species described per year averaged 4,500 during the 19th century, it rose to about 12,000 during the first half of the 20th century, and has not fallen below 9,000 in the course of the last decades. A thinning out of the possibilities of encountering entirely new fauna through the conquest of unknown lands has been largely compensated for by a systematization of the collection of specimens, and by the multiplication of attempts to establish faunal catalogs as complete as possible. To judge by the rarity of complete catalogs, and the necessity of constantly revising them, we are a long way from finishing this task.

Typically, it would not be surprising today if we discovered an average of 7,000 new varieties of insects every year, hundreds of varieties of each of the large groups of marine invertebrates (molluscs, worms, and crustaceans), and about a hundred varieties of fish. That one can discover much larger animals in the oceans, and even on *terra firma* or in freshwater bodies, seems incredible to many, yet the inventory of marine animals of very large size and terrestrial forms of all kinds is, itself, far from being completed. Every year, an average of three or four amphibians, two or three reptiles, as

many birds, and nearly a dozen mammals are discovered. As to the group wrongly considered the best known, the mammals, we only possess *relatively* complete global identification guides, and full catalogs only for those of Europe, North America, and Australia (and these catalogs contain many doubtful and controversial points). For the guides of Africa, the best-informed authors have deliberately excluded from their manuals all the species of small size, and no mammalogist has yet dared to undertake an equivalent guide for Asia, either for its temperate/cold zone (Palearctic Region) or its tropical one (Oriental Region), and certainly not for South America (Neotropical Region).

The basic objective of cryptozoology, after tentatively locating a species still "hidden," is the gradual accumulation of all the available information on it. One must learn as much as one can about it from its "representatives," so as to be able to put together a kind of identikit picture for it, to sketch the salient features of its behavior, to determine the nature of its habitat, the approximate limits of its area of distribution, and, eventually, to place it, with a reasonable degree of precision, in its proper zoological classification. This would permit one to know with more certainty where and when to look for it, how to approach it, by what ruses to attract it, and, finally, how to bring it down or capture it.

By thus orienting itself toward the discovery of hidden animals, cryptozoology can contribute significantly towards making as complete as possible the inventory of our planet's fauna, and to aid (before it is too late) in the collection of species whose natural habitats are rapidly being destroyed. The example of the recently extinct animals of Madagascar, which disappeared within historical times, shows that a spectacular fauna can disappear, without our even realizing it (and without being directly exterminated by man). A long-range goal of cryptozoology, in my opinion, is to obtain the strict protection of species menaced with extinction before they are even officially recognized. The spread of its methods of investigation is an urgent matter, and a major motive for its reproof of the "wait and see" attitude.

The Snares of Mythification

Only one major objection made of cryptozoology demands that we stop and make a carefully considered rebuttal. It is the objection raised by folklorists, which argues that those animals thought to be hidden because they are unobtainable are, in fact, the product of popular imagination. Traditions and even circumstantial reports dealing with animals still unknown are typically full of fantastic details, even supernatural ones, which are basically incredible. The description of these animals and of their behavior seems borrowed, at least in part, from some personage of universal mythology, and from the sagas of heroes or popular tales. In short, utilizing religious, epic, or folkloric themes whose origins are lost in the depths of time.

The refutation of this objection is delicate and subtle, for it requires that we take into consideration an irrational process, and one of the most obscure at that; namely, mythification.

Let us note that a myth (from the Greek *mythos,* meaning word, narrative, story, legend, or fable according to various authors) does not spring from the delirium of a disordered imagination, and is never pure invention. One of those who has best analyzed the question, Mark Schorer (1960), states that the definition of myth "must be both broad and loose, for myth operates universally and diversely." He adds: "Even a loose definition does not include the current journalistic sense of falsehood." It is only according to a degraded usage that "mythic" has become a synonym for "fictional." On the contrary, myth had, at first, the opposite meaning of "veridical narrative," a "true story," and even a "fundamental truth," and this conception has always been the case in those societies called "primitive."

The study of myths has shown that they reflect primordial beliefs, slowly developed or revealed, which deal with the gods, with the birth of the Universe and everything it contains—from stars to people—with life and death, with sacred rites which may go back to the most distant prehistory, and with historical persons and events transformed into archetypes. The infrastructure of myths, apparently solidified and unshakeable, held itself to be essentially sacred, and is found in the epics of heroes as well as in popular fables, fairy tales, or stories which figure humanized animals. In effect, myths support and impregnate all our thoughts, and seem to have their roots in the subsoil of our being, in what C. G. Jung called "the collective unconscious." It is not impossible that they are intimately tied to the structure of the brain and its functioning, which developed in the course of biological evolution.

So, finally, what defines mythological thought?

Such thought appears to be adaptive, comparable to the immunological defense systems of the body, designed to forearm the mind of men against the traumata associated with novel experiences. These experiences are even more terrifying when we never actually confront them: few fears are as great as that of the unknown. In order to neutralize such fears when information of a certain nature received from the external world crosses that portion of the central nervous system which is sometimes called our "emotional brain," it is likely to be quickly shunted into specific mental categories. It is thus stereotyped and deformed by the same rigid mental molds which form the protagonists and intrigues of our mythology, our epics, and even our old wives' tales. It is in this manner that the majestic cycles of the deified forces of nature, the vicissitudes of the lives of heroes, and the fairy tales, show themselves to have a common origin.

Because of this generalized process of mythification, the many episodes of our own individual lives—from the painful experiences of birth to that of death—seem to develop following a scenario written for all eternity. Thus,

we are allowed to feel that they are the most natural things in the world; they are no longer unpredictable and horrifying.

If imagination deserves the sobriquet which Malebranche gave it, the "madman of the house," its madness is thus of the paranoid variety, because it is rigorously systematized. According to the strict, constraining laws of imagination, which presided over the creation and elaboration of language, there is nothing of the fortuitous in the association of phonemes and the diverse objects and actions of our world; they constantly make use of resemblances, correspondences, and parallelisms. It is also these laws which contribute to completing our knowledge and our comprehension of natural phenomena. Some years ago, the philosopher of science Leon Brunschvicq said that "primitives want to explain everything, whereas the civilized are willing to allow gaps." This distinction between the "savage" and the "civilized" has since been recognized as artificial. Whether we like it or not, the unknown terrifies and disturbs everybody. If, in order to control these fears, the "primitive" relies on explanatory myths, which seem naive and extravagant to rational minds, the modern scientist is likely to deal with them through hypotheses no less controversial and thus just as questionable. In both cases, what it comes down to is the elimination of the *lacunae* of knowledge through the use of imagination, which, as we have seen, is strictly disciplined.

Hidden animals, which by definition we know only in a very incomplete manner, lend themselves easily to this kind of "interpolation," to a forced mythification. To compensate one's ignorance, there is an irresistible tendency to assimilate each of them to what Jung called an archetype, the choice depending upon which mythical beast most closely approaches the one experienced. One borrows from the mythical beast its attributes and its exploits—even the most wild—to transfer them to the unknown animal, and the latter's traits are deformed and amplified so that they fit most easily into the mythical mold. Thus, on the eve of its discovery, the gorilla, in reality debonair and reserved, was represented as kidnapping and violating women, like the satyrs of ancient mythology; the whale shark, an inoffensive muncher of plankton, had a reputaion which would make the great white shark (antihero of *Jaws*) blush with envy; and the giant squid, denizen of the abyss, is shown grabbing sailors from the bridge of their ship, as did the Scylla of Homeric tradition. The more we became acquainted with these "mythical" beasts, the more the holes in our knowledge of them were filled in, and our perceptions of each gradually began to approach its true nature (although never quite reaching it in popular reputation). There remain shadowy zones and important gaps in our knowledge of all animals, even the most easy to observe. Our familiar animals retain a certain mystery themselves: we still don't know for certain how cats purr. In short, animals are all, without exception, more or less mythified: it is simply a question of degree.

It can thus be seen that, although myth is an important factor, the *existence* of the animal mythified cannot be put in question for that reason alone.

Nonetheless, sometimes the degree of mythification is such that the original species is no longer recognizable, unless one takes the trouble to trace the source of the legend. This is the case, for instance, with the unicorn, which finally acquired an existence *quite distinct* from the animal which "gave birth" to it. The unicorn is the final product of a series of transformations undergone by the Indian Rhinoceros to get it to conform to the myth of aggressive virility. Does this mean that the unicorn, a mythical animal, does not exist? It would be nonsense to so state, because who can decide at what point the animal in the process of mythification ceases to be real?

This said, there is obviously a qualitative difference between the fable of the unicorn, captured by a virgin playing on the monster's traditional weaknesses, and the account of a prosaic encounter with a rhinoceros in the Kaziringa Game Preserve. The difference is not that the former treats a fictional animal and the other a real one. The two stories treat the same animal, but one is a tradition and the other is a personal experience. It is easy to distinguish between the fable and the eyewitness account, thanks to the stereotyped aspect of the former.

No one is likely to mistake the traditional story told by a native for a personal testimony. If one felt uncertain about attributing the description of a hairy hominoid (unknown, and hence partly mythified by its observer) as the simple evocation of some demon, one's doubt could be removed by an analysis of the scenario of the account and its content. The abundance of details taken from legend would indicate that the observation was defective or too hastily made, and that mythifying imagination was allowed to fill in too much (by borrowing, for instance, from the experience of others). In this case, suspicions will be aroused, and the testimony will be taken with considerable reservation.

The Hazards of Myth and of Fashion

In the analysis of information and data which are indispensable to cryptozoological investigations (as in all scientific research), there are two antagonistic factors of great importance which must be taken into consideration: myth and fashion. That is to say, the eternal and the transient.

One might argue that reported facts are always both mythified and brought "up to date." On the one hand, they are deformed and completed according to the unchanging structures of mythical thought, and, on the other, they are subject to the influence of current scientific conceptions, provisional because of continual reworking, and, as a consequence, arbitrarily selective.

The task of cryptozoology consists not only of demythifying the content of received information, but also of submitting current scientific theories (in

some cases dogmas) of the zoological sciences to the touchstone of systematic doubt. Cryptozoology aspires to a true skepticism, that which opposes both an *a priori* incredulity, and a naive willingness to believe.

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